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Examiner Christine Mui

### **STATUS OF CLAIMS**

Claims 1-18 are presently pending in the application. Applicant has amended claims 7. Support for the amendment to claim 7 is found, *inter alia*, in paragraph [0010] of the specification. Applicant has added new claim 19. Support for new claim 19 is found in claims 1, 2, and 7 as originally filed. Applicant submits that no new matter has been added.

### **REMARKS**

#### **Rejection Under 35 U.S.C. §112, second paragraph**

In the Office Action, the Examiner rejected claim 7 under 35 U.S.C. §112, second paragraph as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Specifically, the Examiner states that it is unclear whether the pore space is interpreted to be exactly the same on the porous material and the first layer of the flat membrane or if it is interpreted to have a broader interpretation of the pore space as able to have the same pore space.

In response, Applicant respectfully traverses the rejection and its accompanying remarks. However, in order to more distinctly claim the subject matter of the present invention, Applicant has amended claim 7 to clarify that the "second measuring space consists of a pore space of a porous material." The "preferably" clause, has now been deleted from amended claim 7. New claim 19 has been added to provide the further limitation that the "the porous material comprises a first layer of the flat membrane."

In view of the above amendments, Applicant states that the rejection under 35 U.S.C. §112, second paragraph has been obviated.

#### **Rejection Under 35 U.S.C. §103(a)**

Claim 1 is rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Pat. No. 5,979,219 ("Wilsberg") and U.S. Pat. No. 6,463,792 ("Kempe") in further view of U.S. Patent No. 4,821,585 ("Kempe II"). Claims 2-4 are rejected as being unpatentable over Wilsberg, Kempe and Kempe II and further in view of U.S. Pat. No. 6,852,223 ("Huang"). Claim 5 is rejected over Wilsberg, Kempe, Kempe II, and further in view of U.S. Pat. No. 5,331,845 ("Bals"). Claim 6 is rejected over Wilsberg, Kempe, and Kempe II. Claim 7 is

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rejected as being unpatentable over Wilsberg, Kempe, and Kempe II and further in view of Huang and U.S. Pat. No. 7,037,438 ("Benzel"). Claim 8 is rejected as being unpatentable over Wilsberg, Kempe, and Kempe II and further in view of Groboillot. Claims 9-11 are rejected as being unpatentable over Wilsberg, Kempe, Kempe II and further in view of U.S. Pat. No. 4,404,284 ("Heider"). Claims 12, 13, and 15 are rejected as being unpatentable over Wilsberg, Kempe, Kempe II as applied to claim 9 and further in view of Heider. Claim 14 is rejected as being unpatentable over Wilsberg, Kempe, Kempe II and Heider as applied to claim 12. Claims 16-18 are rejected as being unpatentable over Wilsberg, Kempe, Kempe II, and Heider as applied to claim 12, and further in view of U.S. Pat. 4,869,873 ("Klein").

In response, Applicant respectfully traverses the rejections and their accompanying remarks. Applicant asserts that the Examiner has not provided sufficient evidence to support a *prima facie* case of obviousness. The Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. The Examiner bears the burden of establishing a *prima facie* case of obviousness based upon the prior art. The Examiner can satisfy this burden only by showing some objective teaching in the prior art or that knowledge generally available to one of ordinary skill in the art would lead that individual to combine the relevant teachings of the references. *In re Fritch*, 972 F.2d 1260, 1265, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992).

The Examiner's primary argument appears to be that Wilsberg teaches all of the elements of the invention of independent claim 1 except that it fails to teach the construction of a probe device "able to measure a volatile component using a carrier gas." To remedy such deficiency, the Examiner then turns to Kempe as purportedly teaching "a probe device able to measure a volatile component using a carrier gas" and Kempe II as purportedly teaching "a probe device to determine the concentrations of volatile components in liquids or gases with a carrier gas traveling through a carrier guide canal covered by the permeation members."

To support such combination, the Examiner concludes, without any evidence, that "*it would have been obvious to one of ordinary skill in the art at the time of the invention was made to construct the probe device with a carrier gas in order to allow the volatile gas components to travel faster and permit shorter response times*" (emphasis added).

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Applicant respectfully states that such conclusion is not supported by any evidence offered by the Examiner.

Rejections on obviousness grounds cannot be sustained by mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness. *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006), *cited with approval in, KSR Int'l v. Teleflex, Inc.*, 127 S. Ct. 1727, 1740-41, 82 USPQ 1385, 1396 (2007).

Upon reviewing the probe device of Wilsberg in detail, it becomes apparent why the device of Wilsberg fails to teach the claimed invention and why the combination with Kempe and Kempe II fails to establish a *prima facie* case of obviousness. Wilsberg discloses a probe for measuring volatile components in an aqueous solution. However, Wilsberg states that "[t]he goal of the invention" is to "make[] possible higher measuring accuracy and a higher measuring rate and long-term problem-free use in industrial processes with continuous measurement without the use of a carrier gas."(emphasis added)(Wilsberg, col. 1, lines 58-64, Summary of the Invention).

Wilsberg achieves this goal using a mechanism that is very different from that of the current invention. The device of Wilsberg does not use a carrier gas and requires an exchange of gas within the measuring space with the environment via a defined small exchange opening to the atmosphere. Such gas exchange is *diffusion controlled* which one of ordinary skill in the art would understand would result in significantly greater response times for obtaining constant readings than the non-diffusion controlled mechanism of the present invention. Thus, not only does Wilsberg fail to disclose a device that utilizes a carrier gas, it *teaches away* from utilizing a carrier gas and instead, teaches a device that *actively dismisses the need for a carrier gas*. For example, Wilsberg states that

an open continuous pressure relief channel is provided for the outflow of the gases permeating into the measuring chamber on the side of the sensor and the measuring chamber facing away from the membrane, and the pressure relief channel is connected at one end through an opening to the measuring chamber and at the other end on the outlet side has an outlet opening of a size such that the volume flow of the gas permeating through the membrane into the measuring chamber is always slightly larger than the volume flow of the gas leaving the measuring chamber through the outlet opening of the pressure relief channel. . . . *Surprisingly, it has been found that the ability of the probe*

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***to function and the measurement efficiency are considerably improved by discharging the gases from the measuring chamber through a separate pressure relief channel. A carrier gas is no longer needed to flush the membrane.***

(Wilsberg, col. 1, line 65 to col. 2, line 38).

In contrast, as claimed in independent claim 1, Applicant's invention requires that the first measuring space is connected to a carrier gas exhaust and the second measuring space is connected to a carrier gas supply. As taught in the specification, the present invention provides a probe with very short response times, in particularly short dead times, for detecting variations of the concentration of the volatile components in a solution (see paragraphs [0003] to [0005]).

Applicant's invention has achieved significant improvements in response time over the prior art, with various embodiments evidencing response times below 1 second, even below 0.5 seconds (see paragraph [0007]). This result is surprising given that prior art attempts have failed to achieve such fast response rates. For example, one of the references cited by the Examiner, Bals, discloses a carrier gas but fails to provide a response rate of less than 1 second (see Bals, col. 2, lines 47-50, which discloses a response time of "less than 10 minutes, e.g. 5 minutes"). Another comparison between an embodiment of the prior art and the present invention is provided in the specification, paragraph [0022]). The comparison shows surprising results wherein the device of the present invention provides a dead time of less than 1 second whereas the best embodiment of the prior art shows a dead time of 10 seconds.

Given such surprising advances over prior art devices that utilize a carrier gas. Applicant states that the present invention is not obvious given the teaching of Wilsberg, Kempe, Kempe II or any of the other secondary references either singly or in combination. This is particularly apparent given that Wilsberg, itself, teaches away from devices having a carrier gas. Such infirmity in the primary reference simply cannot be remedied by any of the other cited references.

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Since the primary references, either singly or in combination with the secondary references fail to establish a *prima facie* case of obviousness, reconsideration and withdrawal of the rejections as being unpatentable over the cited references is therefore requested.

For at least these reasons, it is respectfully submitted that claim 1 is patentable over the cited references. Claims 2-19 depend upon claim 1 and are therefore patentable for at least the same reasons as is claim 1.

### CONCLUSION

Applicant submits Claims 1-18 are in condition for examination, early notification of which is earnestly solicited. Should the Examiner be of the view that an interview would expedite consideration of this Amendment or of the application at large, request is made that the Examiner telephone the Applicant's attorney at (908) 518-7700 in order that any outstanding issues be resolved.

### FEES

The Office is authorized to charge any fees required to deposit account number 50-1047.

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Respectfully submitted,



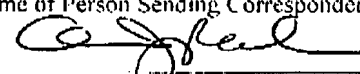
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